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THE NATIONAL TURKEY IMPROVEMENT PLAN

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Emblem authorized for use by official State agencies and industry members to signify cooperation in the National Turkey Improvement Plan

U. S. DEPARTMENT OF AGRICULTURE

IN 1937 a tentative turkey-improvement plan was developed by a National Turkey Improvement Committee. That plan was intended as a guide for State turkey-improvement work until such time as there was sufficient demand to justify the formulation of a National Turkey Improvement Plan.

In 1941 the National Turkey Federation appointed a special committee to study State programs and to develop a turkey-improvement plan that could be applied throughout the country. The plan developed by the committee was presented at the 1943 annual meeting of the Federation and unanimously adopted by the general session.

The National Turkey Improvement Plan became operative September 25, 1943, with the approval of the Secretary of Agriculture and under authority of an appropriation made by Congress for the Bureau of Animal Industry, United States Department of Agriculture, to be used in cooperation with State authorities in the administration of regulations for the improvement of poultry, poultry products, and hatcheries. Authority for the administration of the plan is now contained in the Department of Agriculture Organic Act of 1944. (Public 425, 78th Congress, H. R. 4278.)

Acceptance of the turkey plan is optional with States and individual members of the industry within States. It is administered in each State by an official State agency cooperating with the Bureau of Animal Industry, United States Department of Agriculture.

The turkey plan will require revision from time to time to conform with the development of the industry and with new information as it becomes available. Revisions will be considered at meetings of authorized representatives of the turkey breeders and hatcheries with representatives of the Bureau of Animal Industry.

The primary objectives of the National Turkey Improvement Plan are to improve the production and market quality of turkeys and to reduce losses from disease. Through it turkey breeding stock, hatching eggs, and poults may be identified, authoritatively, with respect to breeding quality and degree of freedom from pullorum disease. The application of the provisions of the plan should cause turkey production to be more efficient and thus aid in making the enterprise more profitable.

THE NATIONAL TURKEY IMPROVEMENT PLAN[1]

Prepared by the Bureau of Animal Industry, in cooperation with representatives of the official State agencies, the National Turkey Federation, and turkey breeders and hatcheries

CONTENTS

	Page
Article 1. General regulations	1
Article 2. Breeding stages	6
Section 1. U. S. Approved breeding stage	6
Section 2. U. S. Certified breeding stage	8
Section 3. U. S. Record of Performance breeding stage	8
Section 4. U. S. Register of Merit breeding stage	14
Article 3. Pullorum classes	16
Section 1. General provisions	16
Section 2. U. S. Pullorum-Tested class	18
Article 3. Pullorum classes—Con.	
Section 3. U. S. Pullorum-Controlled class	19
Section 4. U. S. Pullorum-Passed class	20
Section 5. U. S. Pullorum-Clean class	21
Appendix	21
Official testing for pullorum disease	21
The standard tube agglutination test	22
The rapid serum test	23

ARTICLE 1. GENERAL REGULATIONS

REGULATION 1.—For the purposes of this plan the following words, phrases, names, and terms shall be construed, respectively, to mean—

Paragraph 1. **Turkey plan.**—The National Turkey Improvement Plan.

Par. 2. **Chicken plan.**—The National Poultry Improvement Plan.

Par. 3. **Official State agency.**—The agency recognized by the Bureau of Animal Industry, United States Department of Agriculture, to cooperate in the administration of the turkey plan within the State. It may be the State department of agriculture, State college of agriculture, State poultry improvement board or association, or other agency recognized officially by the State government.

Par. 4. **State inspector.**—An employee or authorized representative of the official State agency whose duties in conection with the turkey plan comprise the official inspection of flocks, eggs, poults, hatcheries, turkey premises, records, and methods employed in carrying on the work of the turkey plan.

Par. 5. **R. O. P. supervisor.**—An employee or authorized representative of the official State agency whose duties in connection with the turkey plan are to represent the official State agency in its supervision of U. S. R. O. P. (U. S. Record of Performance) and

[1] The turkey improvement plan was originally described in a mimeographed statement issued in October 1943. It was revised in 1944, 1945 and 1946 at meetings of official delegates, representatives of the National Turkey Federation, and representatives of the Bureau of Animal Industry.

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U. S. R. O. M. (U. S. Register of Merit) work and to vouch for the accuracy of all U. S. R. O. P. and U. S. R. O. M. records made by the U. S. R. O. P. breeders under his jurisdiction.

Par. 6. **R. O. P. inspector.**—An employee or authorized representative of the official State agency whose duties in connection with the turkey plan are the inspection of flocks and records of U. S. R. O. P. turkey breeders.

Par. 7. **Flock-selecting agent.**—A person who has taken a course of training in and passed an examination on (1) the selection of turkey breeding stock according to standardbred and meat-production qualities as prescribed by the State college of agriculture or other properly constituted State agency and (2) the turkey-plan provisions as applied in the State, and who has been authorized by the official State agency to do the flock-selecting work as provided for in the breeding stages of the turkey plan. As an emergency and to take care of individual cases only, the official State agency may, at its discretion, authorize flock-selecting agents who have not taken the specified course of training. Only those persons who have demonstrated to the official State agency through work in the field that they are capable of doing satisfactory selecting work, may be so authorized.

Par. 8. **State pullorum tester.**—An employee or authorized representative of the official State agency, who has training in pullorum-testing technique, a working knowledge of the turkey-plan provisions as applied in the State, and other qualifications necessary to do the pullorum-testing work as provided for in the plan.

Par. 9. **Blood collector.**—A person who has been trained in the proper method of collecting blood samples for the pullorum disease test, who has passed an examination on the turkey plan provisions as applied in the State, and who has been authorized by the official State agency to do the blood-collecting work.

Par. 10. **Eggs and hatching eggs.**—Turkey eggs and turkey hatching eggs.

Par. 11. **Baby poults.**—Poults that have not been fed or watered.

Par. 12. **Started poults.**—Poults that have been fed or watered.

Par. 13. **Breeding stock.**—Turkeys that are to be used for breeding purposes.

Par. 14. **Flock.**—All turkeys of one variety on the same premises, except that crossmated birds as provided in Regulation 9 shall be construed as one flock.

Par. 15. **Flock owner.**—A person, firm, or corporation maintaining a breeding flock of turkeys.

Par. 16. **Hatchery.**—Hatchery equipment on one premises operated or controlled by any person, firm, or corporation producing poults.

Par. 17. **Premises.**—An area of ground, a portion of a building or unit of buildings and equipment on or in which is maintained breeding turkeys, growing turkeys, poults, or birds of any species, hatching eggs, or hatching equipment.

Par. 18. **U. S. R. O. P.**—U. S. Record of Performance.

Par. 19. **U. S. R. O. M.**—U. S. Register of Merit.

Par. 20. **Official label.**—A label, obtained through or approved by the official State agency, on which are indicated the product, the breeding stage, and the pullorum class.

Par. 21. **Standard varieties.**—Varieties of turkeys recognized by the American Poultry Association.

Par. 22. **Small varieties.**—Varieties of turkeys with weights below those recognized by the American Poultry Association for standard varieties and developed primarily to provide for small-family trade.

Par. 23. **Broad Breasted Bronze.**—A variety of turkey developed especially for large size and extremely wide breast. In order to qualify as a Broad Breasted Bronze in the turkey plan, the width of the breast at a point 1¾ inches above the keel shall be at least 3½ inches at the approximate age of 6 months, for both toms and hens.

Par. 24. **Crossbred poults and hatching eggs.**—Poults and hatching eggs produced from a mating of toms of one variety with hens of another variety.

Regulation 2.—The official State agency shall conduct efficiently the inspection work called for in the turkey plan and shall direct, administer, supervise, and be responsible for all the work done relative to flock selection in the various breeding stages and to testing for pullorum disease as provided for in the turkey plan.

Regulation 3.—Turkey-breeding houses and pens shall be kept clean and in good condition. The land in the immediate vicinity of the turkey-breeding houses and pens shall be kept in sanitary condition.

Regulation 4.—Hatcheries and all equipment shall be kept in strictly sanitary condition. All incubators must be thoroughly cleaned and disinfected by spraying or fumigating after each hatch, by means of an officially recognized method.

Regulation 5.—All eggs used in any breeding stage of the turkey plan shall be reasonably uniform in size and shape, sound in shell, and shall weigh at least 2½ ounces each. Nonpedigreed hatching eggs shall be trayed and the poults boxed with a view to uniformity of size.

Regulation 6.—The management of a hatchery participating in the turkey plan shall maintain the identity of hatching eggs being incubated, including those which are being custom-hatched, and shall keep accurate records concerning the name and address of each flock owner; the number of eggs received from each flock owner; the name and address of each purchaser; the number, hatchery grade, if any, variety, and date of shipment or delivery of all poults and hatching eggs. These records shall be open for official inspection at all times. Eggs received and poults hatched shall be subject to inspection at all times.

Regulation 7.—All poults sold or offered for sale under the turkey-plan terminology shall be normal and representative of the variety.

Regulation 8.—Shipment of poults shall be made in approved types of poult boxes properly ventilated and securely tied, and poults shall be shipped to reach the ultimate purchaser within the time limit prescribed by the United States Postal Regulations.

Regulation 9.—Only one variety of turkeys shall be kept on a farm unless, where more than one variety is kept, ample provision has been made to keep these varieties and their eggs separate, in a manner satisfactory to the official State agency. With the approval of the official State agency, crossbred hatching eggs and poults may be pro-

duced and sold by participants in the turkey plan, provided the parent stock is selected and banded, and the flock is inspected as required in the U. S. Approved breeding stage. These flocks shall be designated as U. S. Approved Crossmated flocks. Hatching eggs or poults from such flocks shall be designated as U. S. Approved Crossbred hatching eggs or poults, with a descriptive phrase designating the variety of the toms and the variety of the hens used in the cross. (The variety of the tom shall be designated first in all crosses.)

Regulation 10.—When more than one hatchery located within a State is operated under the same name, ownership, or management, one or more of these hatcheries may not participate in the turkey plan unless all of them participate in the same breeding stage and pullorum class. In the event that any person, firm, or corporation has nonparticipating hatcheries in other States no poults or hatching eggs shall be shipped to the participating hatcheries from the nonparticipating hatcheries.

Regulation 11.—Breeding stock and each bundle or package of hatching eggs and poults sold or offered for sale by participants shall be designated by official labels or tags specifying the breeding stage and pullorum class, except that poults that are seconds, culls, rejects, or abnormal for variety characteristics shall not be sold or offered for sale under official labels. (See regulations 7 and 21.) With the approval of the official State agency, hatching egg supply flock owners of a participating hatchery need not officially label each consignment of hatching eggs delivered to the hatchery.

Regulation 12.—All advertising must be in accord with the rules and regulations of the turkey plan and the Fair Trade Practice Rules of the Federal Trade Commission for the baby chick industry. Copies of proposed folders, catalogs, circulars, or other literature shall be submitted to and approved by the official State agency before being printed. Copies of such literature, after being printed, shall be filed with the official State agency. Copies of all publication advertising shall be mailed to the official State agency at or before the time these advertisements are submitted to the publisher or publishers. The advertising literature of hatcheries which have places of business in more than one State shall be approved by the official State agency in which the main or home office is located after being checked by the Bureau of Animal Industry, except that local advertising literature for each State, branch or branches, shall be approved by the official State agency of each such State in which branches are located. Since U. S. R. O. P. and U. S. R. O. M. are generally understood to apply to chickens, a participant in the turkey plan who uses these terms shall prefix them with the word "turkey" in letters of the same size of type. (Refer also to regulation 15 for proper use of terms.)

Regulation 13.—The National Turkey Improvement Plan emblem (see cover page), the official terms, and various designs illustrative of the breeding stages and pullorum classes (figs. 1 to 8) may be used only by participants who have met the specified requirements.

Regulation 14.—Any person, firm, or corporation desiring to participate in the turkey plan, except flock owners who are affiliated with participating hatcheries, shall sign an agreement with the official State agency and shall not purchase, receive, offer for sale, or be a dealer in or agent for breeding stock, hatching eggs, or poults other than

those produced under the turkey plan, except with permission from the official State agency. In certain cases special permission may be granted by the official State agency in writing, to purchase hatching eggs, poults, or breeding stock not produced under the turkey plan for use in breeding or hatching-egg supply flocks. In such cases a report shall be made to the official State agency on each shipment received and to whom delivered.

REGULATION 15.—Flocks, hatching eggs, hatcheries, and poults that have met the requirements of both a breeding stage and pullorum class of the turkey plan shall be designated in accordance with the stage and class attained as follows: U. S. Approved, Pullorum-Tested; U. S. Approved, Pullorum-Controlled; U. S. Approved, Pullorum-Passed; U. S. Approved, Pullorum-Clean; U. S. Certified, Pullorum-Tested; U. S. Certified, Pullorum-Controlled; U. S. Certified, Pullorum-Passed; and U. S. Certified, Pullorum-Clean.

Matings, hatching eggs, and poults that have met the requirements of one of the higher breeding stages and a pullorum class of the turkey plan shall be designated in accordance with the class attained as follows: U. S. R. O. P., Pullorum-Tested; U. S. R. O. P., Pullorum-Controlled; U. S. R. O. P., Pullorum-Passed; U. S. R. O. P., Pullorum-Clean; U. S. R. O. M., Pullorum-Tested; U. S. R. O. M., Pullorum-Controlled; U. S. R. O. M., Pullorum-Passed; and U. S. R. O. M., Pullorum-Clean.

Where descriptive terms are used in advertising, in addition to the official terminology of the turkey plan, such terms shall be clearly explained.

REGULATION 16.—Started poults shall be labeled as such, and all the poults in each lot sold or offered for sale shall be of the same age (hatching date) unless otherwise specified.

REGULATION 17.—With the approval of the official State agency, hatching-egg and poult dealers may participate in the turkey plan and enjoy all the privileges of participating hatcheries in the handling of hatching eggs and poults, provided all the applicable requirements for participating hatcheries are fully and completely complied with.

REGULATION 18.—Noncompliance with the provisions of the plan which is not corrected within a reasonable time shall bar any participant from further participation for a period of 2 years. Such action shall not be taken until a thorough investigation and hearing have been conducted by the official State agency.

REGULATION 19.—Participation in one of the pullorum classes shall be a prerequisite to participation in any of the breeding stages of the turkey plan, except that an R. O. P. breeder who fails to qualify for one of the pullorum classes may continue to participate in the R. O. P. breeding stage so long as he satisfies the official State agency that he is proceeding as rapidly as possible to qualify for one of the pullorum classes. During this period each sale of hatching eggs, poults, and breeding stock must first be approved by the official State agency.

REGULATION 20.—Participation in any phase of the turkey plan shall be construed as maintaining supervision and compliance throughout the 12 months of the year. (It is understood that a participant may withdraw from participation or that his agreement may be terminated by the official State agency for cause.)

REGULATION 21.—Poults and hatching eggs produced under the rules and regulations of the turkey plan shall lose their identity as of the turkey-plan terminology when they are purchased for resale by non-participants.

REGULATION 22.—The following body weights by classes for the various varieties should be considered as suggested minimums in all breeding stages:

TABLE 1.—*Body weights by classes for the various varieties of turkeys*

Class	Small varieties	Standard varieties other than Bronze	Standard Bronze	Broad Breasted Bronze
	Minimum body weight	Minimum body weight	Minimum body weight	Minimum body weight
	Pounds	*Pounds*	*Pounds*	*Pounds*
Adult tom	16	29	30	33
Yearling tom	15	25	28	30
Young tom (24 weeks)	10	14	17	21
Adult hen	10	16	18	20
Yearling hen	9	14	16	18
Young hen (24 weeks)	7	10	12	14

REGULATION 23.—The selection of birds in a flock to qualify as U. S. Approved or U. S. Certified by a State inspector shall be regarded as one official inspection, provided a complete inspection is made and so reported.

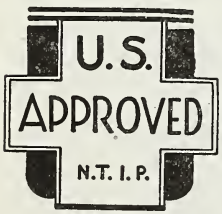
REGULATION 24.—The term, "broad-breasted" shall not be used in describing any variety of turkeys unless the width of the breast at a point 1¾ inches above the keel was at least 3½ inches in width for both toms and hens at the approximate age of 6 months.

ARTICLE 2. BREEDING STAGES

SECTION 1. U. S. APPROVED BREEDING STAGE

Paragraph 1. **U. S. Approved flocks.**—These flocks shall meet the following requirements: Toms and hens shall be carefully selected once each year for constitutional vigor and standardbred qualities to a reasonably high degree. The following specifications should be emphasized:

(*a*) Conformation: Body should be deep and relatively rectangular in shape, flesh of breast well developed, giving this region a rounded fullness, in contrast to sharp-keeled birds lacking in muscular development. The front point of the keel should be well fleshed and free from coarseness. The back should be flat and wide over its entire length. Leg bones should be sturdy, of medium length, and without coarseness. Normal turkey carriage, or posture (body carried at an angle of 35° to 45° from the horizontal) is important as are sturdy, strong legs placed squarely under the body.



(GREEN)

FIGURE 1.—Design used to identify U. S. Approved flocks, eggs, poults, and hatcheries.

(*b*) Shape of breastbone: Breastbone should be straight, relatively long, and parallel with the back. It should extend well up between the lower thighs (drumsticks) as the bird is suspended by the legs.

(*c*) Rate of maturity: Birds showing definite indications of late maturity should not be approved.

Par. 2. The method of selecting turkey breeding stock for standard-bred and meat-production qualities prescribed by the State college of agriculture or other properly constituted State agency shall serve as a basis for the selection of toms and hens. Recommendations of special committees of the National Turkey Federation and the American Poultry Association on turkey type, weight, and other variety characteristics may properly be used as guides in developing and improving standards of selection. Emphasis at all times should be placed upon uniformity as regards conformation, size, color, carriage, and appearance of the birds remaining in the breeding flock after selection is completed. All birds to be used in U. S. Approved breeding flocks shall be selected by a State inspector or by a flock-selecting agent.

Par. 3. All birds selected for U. S. Approved breeding flocks shall be banded at the time of selection, with sealed and numbered leg or wing bands obtained from the official State agency. Birds rejected by the State inspector or the flock-selecting agent shall have leg and wing bands removed, and shall be kept separate from the breeding flocks. The selection of birds for U. S. Approved flocks shall be completed prior to March 1, and at least 10 days before any eggs are saved for hatching purposes, except that this 10-day interval shall not be required if all the toms found in the breeding flock are approved. No birds shall be selected and approved earlier than at 22 weeks of age.

Par. 4. Each year at least one-third of the U. S. Approved flocks in any State must be inspected by the State inspector during the hatching season. The inspection of a flock by a State inspector shall consist in the physical examination, by handling, of a sufficient number of toms and hens to satisfy him that the flock-selection work performed meets the requirements of the U. S. Approved breeding stage.

Par. 5. No birds except those with official sealed and numbered leg or wing bands shall be allowed in the breeding flocks, and no toms shall be allowed with any other hens of breeding age on the same premises except in U. S. R. O. P. or U. S. R. O. M. matings.

Par. 6. **U. S. Approved hatching eggs.**—Such eggs shall come from U. S. Approved flocks.

Par. 7. **U. S. Approved poults.**—They shall be hatched from U. S. Approved hatching eggs and in U. S. Approved hatcheries.

Par. 8. **U. S. Approved hatcheries.**—These hatcheries shall be inspected and approved by a State inspector at least once during the hatching season. They may not incubate, hatch for sale, or sell hatching eggs and poults other than those produced under the breeding stages of the turkey plan. U. S. Approved hatcheries may hatch for sale and sell both U. S. Approved and U. S. Certified poults of the same variety, provided adequate segregation of eggs and poults is practiced and ample records are kept to satisfy the official State agency that there is no mixing or interchanging from one breeding stage to another.

SECTION 2. U. S. CERTIFIED BREEDING STAGE

Paragraph 1. **U. S. Certified flocks.**—These flocks shall fulfill all the requirements of U. S. Approved flocks and shall be free from disqualifications. The hens shall be mated to U. S. R. O. P. toms or to sons of U. S. R. O. M. matings. The toms shall be selected by a State inspector and the hens by a State inspector or a specially authorized flock-selecting agent. All flocks shall be inspected and approved by a State inspector at least once during the breeding season. After the second year of U. S. Certified breeding work on any farm, hens to be used as breeders shall be from U. S. Certified flocks or from U. S. R. O. P. or U. S. R. O. M. matings.

(YELLOW)

FIGURE 2.—Design used to identify U. S. Certified flocks, eggs, poults, and hatcheries.

Par. 2. **U. S. Certified hatching eggs.**—Such eggs shall come from U. S. Certified flocks.

Par. 3. **U. S. Certified poults.**—They shall be hatched from U. S. Certified eggs in U. S. Certified hatcheries or in U. S. Approved hatcheries. When hatched in U. S. Approved hatcheries adequate segregation of eggs and poults must be provided and ample records must be kept to satisfy the official State agency that there is no mixing or interchanging from one breeding stage to another.

Par. 4. **U. S. Certified hatcheries.**—These hatcheries may hatch for sale and sell U. S. Certified eggs or poults and eggs and poults from U. S. R. O. P. and U. S. R. O. M. matings only. They shall fulfill all the requirements of U. S. Approved hatcheries.

SECTION 3. U. S. RECORD OF PERFORMANCE BREEDING STAGE

Paragraph 1. U. S. Record of Performance embraces records of egg production, egg weight, hatchability, and body weight made on the breeder's premises under official supervision and similar records made at State colleges of agriculture, and State and Federal experiment stations, when such records are passed on by the official State agency and when the individual birds meet other U. S. R. O. P. requirements. The birds produced by State colleges of agriculture and State and Federal experiment stations may be recognized as U. S. R. O. P. only for the use of U. S. R. O. P. breeders in their breeding work. The primary objective of this and the U. S. R. O. M. breeding stage is to produce young toms to head U. S. Certified flocks.

Par. 2. The trap nests used in U. S. R. O. P. work shall be of an approved type and shall be kept in perfect working order at all times. The breeding farm and all egg-production records shall be subject at all times to unannounced inspections by a State inspector. At the time of each inspection, the inspector shall have sole charge of the trap nests and of eggs laid. Each U. S. R. O. P. candidate shall be banded with a sealed and numbered official leg band. No hens other than those entered in U. S. R. O. P. shall be allowed in the pens where U. S. R. O. P. candidates are being trap-nested, except with the approval of the official State agency.

Par. 3. U. S. R. O. P. eggs and poults may be produced only on a U. S. R. O. P. breeder's premises except that with the approval of the

official State agency (*a*) a U. S. R. O. P. breeder may have eggs hatched by any hatchery operating under the turkey plan provided the U. S. R. O. P. breeder does the pedigreeing of the poults; and (*b*) a U. S. Approved or U. S. Certified hatchery owner may produce U. S. R. O. P. poults from purchased U. S. R. O. P. eggs for the use of his hatchery-flock owners only, provided proper records of purchases are sent to the official State agency and a State inspector does the wing-banding of these poults.

Par. 4. When U. S. R. O. P. hatching eggs are transferred from one U. S. R. O. P. breeder to another U. S. R. O. P. breeder or hatcheryman for the purpose of hatching U. S. R. O. P. poults, the conditions that shall govern such a transaction include the following: (*a*) The U. S. R. O. P. breeder who sells the U. S. R. O. P. hatching eggs must send a report in triplicate at the time the eggs are shipped consisting of a list of the eggs sold, the pen or sire number and dam number of each egg, and the egg production, average egg weight, hatchability, and body weight of each dam, to his R. O. P. supervisor. If the eggs are shipped outside the State, these records shall be attested to by the R. O. P. supervisor, who shall retain one copy and mail one copy to the purchaser and one to the official State agency of the State to which the eggs are shipped. (*b*) Within 5 days after incubation has begun, the purchasing U. S. R. O. P. breeder or hatcheryman must submit to his official State agency a list of the U. S. R. O. P. eggs bought. (*c*) Within 5 days after hatching time the U. S. R. O. P. breeder or hatcheryman who purchased the eggs must send to his official State agency a list of the poults hatched from each dam and their respective wing-band numbers.

(BLUE)

FIGURE 3.—Design to identify U. S. R. O. P. hatching eggs, poults, and breeding stock.

Par. 5. When U. S. R. O. P. poults, young toms, or mature birds are sold or transferred by members of the industry participating in the turkey plan, the individual making the sale must send a report in triplicate to his R. O. P. supervisor at the time these products are shipped giving the number of birds sold; the leg- or wing-band number, egg production, average egg weight, hatchability, and body weight of each dam, and the pen or leg-band number of the sire of each poult, young tom, or mature bird. If the poults, young toms, or mature birds are shipped outside the State, these records shall be attested to by the R. O. P. supervisor, who shall retain one copy and mail one copy to the purchaser and one to the official State agency of the State to which these products are shipped.

Par. 6. To be eligible for U. S. R. O. P. entry, all hens shall have been raised from U. S. R. O. M. matings, U. S. R. O. P. matings, or U. S. Certified flocks or other flocks of breeding satisfactory to the official State agency and the individual birds must meet the body type requirements prescribed by the official State agency. Eligibility shall be confined to any standard variety or other variety recognized by the official State agency.

Par. 7. All hens trap-nested on the premises of a U. S. R. O. P. breeder shall be considered as entered under U. S. R. O. P. supervision

with the following exceptions: (*a*) All qualified U. S. R. O. P. hens may be trap-nested. (*b*) He may, with the approval of the official State agency, trap-nest any other variety which he is developing as a basis for future U. S. R. O. P. work. (*c*) With the approval of the official State agency, hens in their second or subsequent production years may be privately trapped to complete records that were begun before U. S. R. O. P. work was undertaken.

Par. 8. All matings shall be inspected at least two times each year. One or more consecutive days of inspection by the R. O. P. inspector shall represent a single inspection. In the event of an outbreak of contagious disease on a turkey farm where U. S. R. O. P. work is carried on, inspection may be temporarily suspended.

Par. 9. **Duties of R. O. P. supervisor.**—The R. O. P. supervisor shall represent the official State agency in its supervision of U. S. R. O. P. work, and he shall vouch for the accuracy of all U. S. R. O. P. records made by authorized U. S. R. O. P. breeders under his jurisdiction. He shall keep on file in his office at least five years, (*a*) a record of all qualified toms, with at least one-generation pedigree showing U. S. R. O. P. records of the female ancestors, and (*b*) a record of all qualified hens with their U. S. R. O. P. records. He shall also keep on file a record of all U. S. R. O. P. matings and all U. S. R. O. P. poults with at least one-generation pedigree.

Par. 10. The R. O. P. supervisor, in publishing a summary of the U. S. R. O. P. work under his supervision each year, shall include the following information for each flock:

(*a*) Total number of young hens of that particular variety on the farm.

(*b*) Number of young hens entered in U. S. R. O. P.

(*c*) Number of young hens meeting the U. S. R. O. P. requirements.

(*d*) Percentage of hens entered meeting the U. S. R. O. P. requirements.

(*e*) Average rate of (percentage) egg production of the qualifying hens.

(*f*) Average egg weight of the qualifying hens.

(*g*) Average body weight of the qualifying hens.

(*h*) Average hatchability of the qualifying hens.

Par. 11. The R. O. P. supervisor may bring charges to the official State agency of his State against any U. S. R. O. P. breeder for falsifying records, for unethical conduct in his business methods, or for any other cause which he may consider detrimental to U. S. R. O. P. work. On such charges being proved in a fair hearing the offending breeder must be reprimanded or suspended by the official State agency according to the nature of the offense. (See Regulation 18.)

Par. 12. **Duties of R. O. P. inspector.**—The R. O. P. inspector shall work under direction of the R. O. P. supervisor. It shall be his duty to visit and inspect the work of each U. S. R. O. P. breeder at least three times each year, his visits to be unannounced, and two of which shall be during the trap-nesting period. On each visit during the trap-nesting period he shall do the trap nesting for the day and shall record all eggs laid and shall weigh and record the weight of the egg laid by each individual bird entered in U. S. R. O. P. He shall examine hens apparently out of production to see that they are not being credited with eggs. On at least one visit he shall examine all

birds in U. S. R. O. P. and U. S. R. O. P.-candidate matings to see that the birds which constitute these matings are properly listed with the supervisor. He shall compare the number of eggs being incubated from each hen with the number she is credited with having laid during the corresponding period, and shall have authority to test those eggs for fertility. When the hatch is reported he shall compare his findings with the number of poults reported hatched and wing-banded. He shall be courteous to breeders at all times, but shall be on the alert to discover errors in records or violations of rules, intentional or otherwise. He shall immediately report to the supervisor any suspicious circumstances or appearance of fraud in the records or business dealings of a U. S. R. O. P. breeder.

Par. 13. **U. S. R. O. P. turkey breeder.**—A U. S. R. O. P. turkey breeder is a person, firm, or corporation maintaining turkey matings in accordance with the provisions of the U. S. R. O. P. breeding stage. In addition to the U. S. R. O. P. and U. S. R. O. P.-candidate matings, all other mated hens supplying hatching eggs, to such turkey breeder or to any hatchery owned or operated by him shall qualify for one of the breeding stages of the turkey plan.

Par. 14. Each candidate mating of a U. S. R. O. P. breeder shall be trap-nested at regular intervals every day for a period of eight consecutive weeks; this period to be agreed upon annually in advance by the breeder and the R. O. P. supervisor.

Par. 15. The breeder shall send to his supervisor, not later than the tenth day of each month, a complete report of all trap-nesting and candidate egg weights for the previous month. He shall also send to his supervisor a complete record of all pedigreed eggs set, poults hatched, and poults banded on N. P. I. P. Form 8 or a substitute form within 5 days after the date of each hatch. The egg production, pedigree, and sales records shall at all times be open to examination by the R. O. P. supervisor or inspector.

Par. 16. **U. S. R. O. P. hens.**—In order to qualify for U. S. R .O. P. young hens shall meet the following requirements:

(*a*) Be trap-nested in a single-tom mating under official supervision for a period of 8 consecutive weeks as specified in paragraph 14 of this section.

(*b*) Produce eggs at the rate of at least 50 percent during this 8-week trapping period.

(*c*) Produce eggs with an average weight of at least 30 ounces to the dozen. To obtain the official egg weight all the normal eggs laid during at least 2 consecutive weeks (14 days) of the 8-week trapping period and a minimum of 10 eggs shall be weighed and their combined total weight averaged to the nearest whole number. To arrive at a whole number with which to express the average, round down on all decimals less than 0.50 and round up on all decimals of 0.50 or more; e. g.—where the calculated average is 32.49 ounces the official average shall be reported as 32 ounces and where the average is 32.50 ounces or 32.51 ounces the official average shall be reported as 33 ounces.

(*d*) Produce eggs that hatch at the rate of 70 percent or more of all eggs set, except that at altitudes of 3,000 to 3,499 feet, the minimum qualifying hatchability percentage shall be 65 and at altitudes of 3,500 feet or more, the minimum qualifying hatchability percentage shall be 60. To obtain the official percentage hatchability, all the normal eggs

produced by the candidate during the 8-week trapping period and a minimum of 28 eggs shall be incubated. And all the poults hatched shall be counted. The percentage of hatchability shall be expressed as a whole number. The rounding process described in paragraph (*c*) above shall be used.

(*e*) Be a reasonably good representative of the variety in the judgment of the R. O. P. inspector and be of at least qualifying body weight for young hens (due allowance being given to the 6-pound tolerance), as set forth in the latest revision of the American Standard of Perfection. For varieties not included in the Standard of Perfection, the type and qualifying weight shall be established by the official State agency. The official body weight shall be expressed as a whole number and shall be taken by the breeder or the R. O. P. inspector at or about the time the candidate begins egg production, provided that when the weights are taken by the breeder they shall be checked by the R. O. P. inspector at the time of his next inspection visit to the flock. In checking weights a sufficient number of candidates shall be weighed by the R. O. P. inspector to satisfy him that the weights taken by the breeder are correct.

Par. 17. All hens meeting the above requirements shall be considered U. S. R. O. P. hens. Before such hens may be sold as U. S. R. O. P. hens or used in U. S. R. O. P. matings they shall be examined and banded by the R. O. P. supervisor or inspector with a U. S. R. O. P. sealed, official leg band.

Par. 18. The U. S. R. O. P. breeder and the R. O. P. inspector shall record the leg-band numbers of all U. S. R. O. P. candidates showing a disqualification or laying eggs of undesirable shape or shell texture. Such hens shall not qualify as U. S. R. O. P. hens. The R. O. P. inspector may remove the U. S. R. O. P. leg band from any hen which develops these disqualifications or defects subsequent to qualification.

Par. 19. **U. S. R. O. P. toms.**—Toms produced from U. S. R. O. P. poults shall qualify as U. S. R. O. P. toms provided they shall have passed the final individual inspection of a State inspector not earlier than at 22 weeks of age. Young toms from U. S. R. O. P. candidate matings are eligible for qualification as U. S. R. O. P. toms after their dams qualify as U. S. R. O. P. hens. Each tom passed by an inspector shall possess strong constitutional vigor and be a good representative of the variety, shall be free from disqualifications, and shall be banded with a U. S. R. O. P. sealed and numbered official leg band when passed by the inspector. At the time of inspection and banding, the inspector shall make a complete record of the wing- and leg-band numbers and body weight of each tom banded. Privately pedigreed toms referred to in the next paragraph and that have met the progeny-test requirements for U. S. R. O. M. toms shall be considered as having met the requirements for U. S. R. O. M. and U. S. R. O. P. toms and may be officially leg-banded as such.

Par. 20. **U. S. R. O. P. candidate matings.**—These matings shall be comprised of U. S. R. O. P.-candidate hens mated to a U. S. R. O. P. tom to which the following provisions apply:

(*a*) Only one tom shall be allowed in a mating at any one time and the date of entry and removal of toms shall be properly recorded.

(*b*) The hens shall be trap-nested for a minimum period of eight consecutive weeks as required in paragraph 14 and for as much longer as pedigreed eggs are being saved.

(*c*) Each egg shall be accurately identified as to the hen and the tom or pen from which it came.

(*d*) For each hen an accurate record shall be kept of all eggs laid during the trapping period, the number of eggs sold, the number of eggs incubated, the number of poults hatched, and the number banded.

(*e*) The poults from such matings shall be banded with sealed and numbered official wing bands marked "Cand." to differentiate them from U. S. R. O. P. poults.

(*f*) The young tom progeny of the hens which qualify as U. S. R. O. P. hens may qualify as U. S. R. O. P. toms as set forth in paragraph 19 of this section provided they meet all the requirements of U. S. R. O. P. toms except that of being produced from U. S. R. O. P. poults.

(*g*) To make it possible for a breeder to get started in U. S. R. O. P. breeding work within his own strain during the first year of such work on his farm, the tom mated with U. S. R. O. P.-candidate hens need not be a U. S. R. O. P. tom provided he is of equal pedigree or is a U. S. Approved tom of outstanding quality. Such toms may be used in similar matings during the second year of U. S. R. O. P. breeding work, if reinspected and passed by the inspector, but not thereafter unless they qualify as U. S. R. O. M. toms. No eggs or progeny from such a mating shall be sold as U. S. R. O. P. products, except that young toms whose dams qualify for U. S. R. O. P. may be permitted to head U. S. Certified flocks owned or controlled by the breeder and to head U. S. R. O. P. matings on the breeder's premises.

Par. 21. **U. S. R. O. P. matings.**—These matings shall be comprised of only U. S. R. O. P. hens mated to a U. S. R. O. P. tom. The breeder may place in the U. S. R. O. P. mating, hens that are not U. S. R. O. P. provided he does not sell pedigreed eggs, poults, or stock from such hens as U. S. R. O. P. products. The provisions of paragraph 20 shall apply to U. S. R. O. P. matings.

Par. 22. **U. S. R. O. P. hatching eggs.**—Such eggs shall come only from U. S. R. O. P. matings. Each egg shall bear the U. S. R. O. P. number of the hen that laid it and the pen or tom number of the mating.

Par. 23. **U. S. R. O. P. poults.**—They shall come only from U. S. R. O. P. eggs. The poults from each hen shall be hatched separately in pedigree baskets or sacks and shall be banded individually with sealed and numbered official wing bands at the time of removal from pedigree baskets or sacks. The poults shall be subject to inspection at any time.

Par. 24. **Wing- and leg-banding provisions:**

(*a*) All bands shall be obtained through or approved by the official State agency and all purchases of such shall be authorized by and recorded with the official State agency.

(*b*) The use of the letters R. O. P. alone or in combination with any other words or letters on wing or leg bands is limited to U. S. R. O. P. poults, qualified toms, and qualified hens.

(*c*) Wing bands used on U. S. R. O. P. poults shall be stamped with the letters U. S. R. O. P. and shall be so numbered as to permit no two poults on the same breeder's farm being identically numbered.

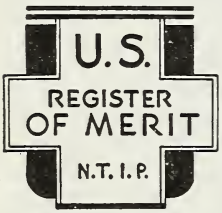
(*d*) Poults from matings of U. S. R. O. P. candidates with U. S.

R. O. P. toms may properly be identified with wing bands stamped with the letters, "Cand."

SECTION 4. U. S. REGISTER OF MERIT BREEDING STAGE

Paragraph 1. This breeding stage incorporates all the requirements of the U. S. R. O. P. breeding stage and in addition includes progeny test records of viability and market quality of the progeny of qualified U. S. R. O. P. toms and hens. U. S. R. O. M. qualification is further limited to only those individual U. S. R. O. P. toms and hens which, on initial inspection, indicated strong vigor, excellent body conformation and fleshing condition, and were excellent representatives of the variety in the judgment of the R. O. P. supervisor or inspector.

Par. 2. The U. S. R. O. P. breeder who desires to qualify birds for U. S. R. O. M. shall rear on his premises or have reared under his supervision poults hatched as set forth in paragraphs 4 or 5 of this section in order that viability and market quality requirements may be determined.



(PURPLE)

FIGURE 4.—Design authorized to identify U. S. R. O. M. males, females, and matings.

Par. 3. **U. S. R. O. M. candidate matings.**—These matings are the same as U. S. R. O. P. candidate matings except that the toms and hens must be of excellent quality as provided in paragraph 1 of this section. The toms and hens in such matings shall be considered U. S. R. O. M. candidates until they qualify as provided in paragraphs 4 and 5, respectively, of this section. After this qualification, the progeny of either the qualified tom or hen shall be considered as coming from a U. S. R. O. M. mating.

Par. 4. **U. S. R. O. M. toms.**—U. S. R. O. P. toms when mated as in paragraph 20, section 3 of this article, shall qualify for U. S. R. O. M. when the following requirements are met:

(*a*) All hatching eggs produced from the mating for the 8-week trapping period referred to in paragraph 14, section 3, of this article and a minimum average of 20 eggs per hen and 200 eggs per mating shall be set.

(*b*) The average hatchability of all eggs set shall be 65 percent or more. At altitudes of 3,000 to 3,499 feet, the minimum qualifying hatchability percentages shall be 60, and at altitudes of 3,500 feet or more the minimum qualifying hatchability percentage shall be 55.

(*c*) The minimum number of poults raised to 8 weeks of age shall be 75 percent of all poults started, provided that at least 100 poults from each pen shall be started.

(*d*) Each young turkey reared, of those referred to in (*c*) above, shall be carefully examined not earlier than at 22 weeks of age by a State inspector or authorized agent of the official State agency. At the time of this examination, at least 60 percent of all young toms and at least 80 percent of all young hens shall be of U. S. Grade A market quality, due consideration being given to the age of the progeny and the climatic environment as related to their fattening and pinfeather condition, provided a minimum of 70 turkeys from each mating meet these requirements.

(*e*) Having met these requirements the tom may be banded by the R. O. P. supervisor or inspector with a sealed official leg band lettered "U. S. R. O. M."

Par. 5. **U. S. R. O. M. hens.**—U. S. R. O. P. hens when mated as in paragraph 20, section 3 of this article shall qualify for U. S. R. O. M. when the following requirements are met:

(*a*) A minimum of 20 poults shall be started of those hatched from eggs produced during the 8-week trapping period referred to in paragraph 14, section 3, of this article.

(*b*) Eighty percent of all poults started shall be alive at 8 weeks of age.

(*c*) Each young turkey reared of those referred to in (*a*) above shall be carefully examined not earlier than at 22 weeks of age by a State inspector or authorized agent of the official State agency. At the time of this examination, at least 60 percent of all young toms and at least 80 percent of all young hens shall be of U. S. Grade A market quality, due consideration being given to the age of the progeny and the climatic environment as related to their fattening and pinfeather condition, provided a minimum of 12 turkeys meet these requirements.

(*d*) Having met these requirements the hen may be banded by the R. O. P. supervisor or inspector with a sealed official leg band lettered "U. S. R. O. M."

Par. 6. **U. S. R. O. M. matings.**—These matings may consist of:

(*a*) U. S. R. O. M. tom remated to the same hens with which he qualified; or

(*b*) U. S. R. O. M. hen remated to the same tom with which she qualified; or

(*c*) U. S. R. O. M. tom remated to the same U. S. R. O. M. hens with which he qualified.

Par. 7. **Poults from U. S. R. O. M. matings.**—These poults shall be hatched as provided in paragraph 23, section 3, of this article and shall have wing bands lettered as follows:

"U. S. R. O. M.—T" for those produced from matings described in paragraph *6* (*a*).

"U. S. R. O. M.—H" for those produced from matings described in paragraph *6* (*b*).

"U. S. R. O. M.—TH" for those produced from matings described in paragraph *6* (*c*).

Par. 8. **Sons of U. S. R. O. M. matings.**—In order to qualify to head U. S. Certified matings, a son of a U. S. R. O. M. mating shall have passed the final individual inspection of a State inspector not earlier than at 22 weeks of age and shall be banded at the time of inspection with an official sealed and numbered leg band. These leg bands shall be lettered "U. S. R. O. P.—TS", "U. S. R. O. P.—HS", or "U. S. R. O. P.—THS", to indicate that the tom so banded is the son of a U. S. R. O. M. tom, a U. S. R. O. M. hen, or both a U. S. R. O .M. tom and a U. S. R. O. M. hen.

Par. 9. At the time of inspection the son of a U. S. R. O. M. mating shall indicate strong vigor, shall show, upon handling, excellent body conformation and fleshing, and shall be an excellent representative of the variety in the judgment of the State inspector. The inspector shall make a complete record of the body weight, wing- and leg-band numbers of each tom banded.

Par. 10. The young toms from U. S. R. O. M.-candidate matings described in paragraph 3 of this section are eligible for qualification as sons of U. S. R. O. M. matings after their parent mating qualifies as a U. S. R. O. M. mating.

ARTICLE 3. PULLORUM CLASSES

The aim or goal in an official pullorum disease testing program for turkeys shall be eradication rather than mere control of the disease. To that end every possible step should be taken not only to eradicate infected birds from the breeding flocks, but also to eliminate all possible or probable avenues of infection for adult breeding stock, poults, and growing turkeys. Complete segregation of turkeys from chickens on the farm and in hatcheries at all stages of development, and during all seasons of the year is urgently recommended.

SECTION 1. GENERAL PROVISIONS

Paragraph 1. The official State agency shall assume responsibility for the accuracy of the pullorum testing work.

Par. 2. The official tests for pullorum disease in turkeys shall be the standard tube agglutination test as described in the Proceedings of the United States Live Stock Sanitary Association, November 30 to December 2, 1932, pages 487–491; and the rapid serum test, as described by Runnells, Coon, Farley, and Thorp, Journal of the American Veterinary Medical Association, Vol. 70, (N. S. 23), No. 5, pages 660–662, 1927.[2] With the approval of the official State agency, the rapid, whole-blood, stained antigen method when conducted by a State inspector as described below may be used as an official test for qualifying for the U. S. Pullorum-Tested and U. S. Pullorum-Controlled classes and for preliminary tests for the U. S. Pullorum-Passed class for a period of 1 year beginning August 1, 1946. Modifications of these procedures may be made operative by an official State agency upon approval by the Bureau of Animal Industry, United States Department of Agriculture.

DIRECTIONS FOR MAKING THE RAPID, WHOLE-BLOOD PLATE TEST FOR PULLORUM DISEASE IN TURKEYS

All official rapid, whole-blood tests of turkeys made under the provisions of the National Turkey Improvement Plan shall be made with an antigen to be identified as Provisional Turkey Stained Antigen and shall be obtained from the U. S. Bureau of Animal Industry upon specific and direct request made by the contact representative of the plan in the State in which the antigen is to be used.

The materials, other than antigen, to be used in the test are those recommended for use in the rapid, whole-blood plate test of chickens, namely, a porcelain or glass plate provided with a white background, a loop that delivers 0.02 to 0.025 cc. of blood, a dropper that delivers 0.05 cc. of antigen, and equipment for cleaning or washing the plates and loops. A thermometer and timepiece must also be provided.

The test shall be carried out in a manner similar to that used in the whole-blood test of chickens as described in Miscellaneous Publication No. 349. The same proportions of blood to antigen (1 to 2 or

[2] For convenience of reference the essential features of these two tests are reprinted in the Appendix, page 22.

3) shall be used. However, the reactions with pullorum infected turkeys are usually less pronounced and develop more slowly than reactions with positive chicken blood. It is, therefore, necessary when testing turkeys to allow a longer time for reading and to observe the smear more closely than when testing chickens. For these reasons, the smear shall be observed for at least 3 minutes after mixing, and all birds that give a visible reaction however slight shall be considered positive reactors and must be removed.

Unless provisions are made for heating the plate, testing shall not be conducted when the air temperature is below 70° F.

More than one test may be placed upon the plate at one time, but the full 3-minute period shall be allowed for reading each test.

Par. 3. In testing for pullorum disease, blood samples shall be drawn by an authorized blood collector and the testing shall be done in a laboratory recognized and approved by the official State agency.

Par. 4. All pullorum tests of flocks in any pullorum class or candidates for any class must be reported to the official State agency.

Par. 5. All new breeding stock (except turkeys of the same or a higher pullorum class) and stock returned to the breeder's farm from exhibits, tests, etc., must be quarantined at considerable distance from the other turkeys. Such turkeys must be kept in quarantine for at least 15 days and then officially tested and found to be negative before being added to the flock.

Par. 6. When more than one breeding flock of turkeys are maintained on the same premises, all such flocks shall be given an official pullorum classification no higher than the lowest classification attained by any one of the flocks.

Par. 7. When other than breeding birds are kept on the same premises, ample provision must be made to keep these birds and their eggs separate.

Par. 8. All domesticated fowl such as chickens, ducks, geese, pheasants, guineas, pea fowl, bantams, etc., shall either be properly tested to meet the same pullorum tolerance as the breeding flock of turkeys, or be segregated from the breeding flock of turkeys at all stages of development and during all seasons of the year.

Par. 9. In the event that tests to qualify or requalify flocks as U. S. Pullorum-Passed or U. S. Pullorum-Clean reveal any reactors, the owner shall have the right to submit, or the official State agency the right to request the submission of, all reactors if 5 or less, or 20 percent of all reactors with a minimum of 5 and a maximum of 20 to a laboratory designated by the official State agency for autopsy and bacteriological examination. In case such bacteriological examination fails to reveal any conclusive evidence of pullorum infection, the flock shall be construed as having had no pullorum. All reactors not slaughtered for bacteriological examination shall be removed and disposed of in a manner satisfactory to the official State agency.

Par. 10. In the event of a thorough investigation or the presentation of other evidence that indicates that pullorum disease outbreaks are occurring in poults, the official State agency may, at its discretion, require additional retesting of the flock or flocks, or make further autopsies and bacteriological examinations.

Par. 11. The custom-hatching of turkey eggs or eggs of other poultry from nonqualified flocks is permitted in U. S. Pullorum-Tested

and U. S. Pullorum-Controlled hatcheries, provided the incubation and hatching of such eggs are done in a separate room under the conditions prescribed in paragraph 12 of this section, but such custom-hatching may not be done in U. S. Pullorum-Passed and U. S. Pullorum-Clean hatcheries.

Par. 12. In separating a room for the use of two or more incubators, to provide for custom-hatching, a tight partition is absolutely necessary and must be provided. Outside ventilation and an outside entry for each room are required. Any door or opening between the two rooms must be sealed, as by weatherstripping and locking, or by battening the cracks around the door in the room where eggs from non-U. S. Pullorum-Tested flocks are being incubated or hatched.

Par. 13. Hatcheries participating in the pullorum classes only shall be inspected and approved by a State inspector at least once during the hatching season.

Par. 14. Each year at least one-third of the flocks participating in the pullorum classes only shall be inspected and approved by a State inspector. Field-testing or blood-collecting shall be regarded as an official flock inspection provided a complete inspection is made and so reported.

(GREEN)

FIGURE 5.—Design used to identify U. S. Pullorum-Tested flocks, eggs, poults, and hatcheries.

SECTION 2. U. S. PULLORUM-TESTED CLASS

Paragraph 1. This class that permits a certain reactor tolerance is made a part of the turkey plan as a recognition that the initial step has been taken toward an eradication program. Under existing conditions in many sections of the country tolerance classes seem necessary in the developmental stage of an official turkey-testing program. No breeder should be content with having qualified his flock for the U. S. Pullorum-Tested class only. Control measures should be practiced continuously with a view to reducing the percentage of reactors each year and qualifying for the higher classes as soon as possible.

Par. 2. **U. S. Pullorum-Tested flocks.**—These flocks shall meet the following requirements:

(*a*) All turkeys to be used as breeders shall be tested for pullorum disease when more than 4 months of age under the supervision of an official State agency, and shall contain fewer than 4 percent reactors in 1946–47, and fewer than 3 percent in 1947–48, the last test being made within 6 months immediately preceding the date of first sale of hatching eggs, poults, or breeding stock from such flocks. At the end of the 1947–48 hatching season, the U. S. Pullorum-Tested class shall be deleted from the plan.

(*b*) All indicated carriers of pullorum disease shall be removed from the premises on completion of the test and disposed of in a manner satisfactory to the official State agency.

(*c*) All birds remaining in the breeding flock shall be properly leg- or wing-banded.

(*d*) Individual birds introduced into U. S. Pullorum-Tested flocks shall have passed, within 6 months, a negative official test for pullorum disease.

Par. 3. A flock containing 4 percent or more of reactors on the first test in 1946–47, and 3 percent or more in 1947–48, on being retested at intervals of not less than 21 days, and all reactors disposed of after each test until the percentage of reactors is less than that designated for the particular year, may qualify as a U. S. Pullorum-Tested flock.

Par. 4. **U. S. Pullorum-Tested hatching eggs.**—Such eggs are from U. S. Pullorum-Tested flocks.

Par. 5. **U. S. Pullorum-Tested poults.**—These are hatched from eggs produced by U. S. Pullorum-Tested, U. S. Pullorum-Controlled, U. S. Pullorum-Passed, and U. S. Pullorum-Clean flocks in a U. S. Pullorum-Tested hatchery.

Par. 6. **U. S. Pullorum-Tested hatcheries.**—These hatcheries operate under the supervision of an official State agency and (1) buy or sell turkey or chicken hatching eggs, (2) incubate and hatch turkey or chicken eggs, (3) brood or sell poults or chicks, or (4) be dealers in or agents for such products from only U. S. Pullorum-Tested, U. S. Pullorum-Controlled, U. S. Pullorum-Passed, or U. S. Pullorum-Clean flocks, except that custom hatching may be carried on under the conditions prescribed in section 1, paragraph 12 of this article.

SECTION 3. U. S. PULLORUM-CONTROLLED CLASS

Paragraph 1. This class, like the U. S. Pullorum-Tested, is a tolerance class differing from U. S. Pullorum-Tested only in the tolerance permitted. It will be the only tolerance class after the 1947–48 hatching season when the U. S. Pullorum-Tested class is to be deleted from the turkey plan. As with U. S. Pullorum-Tested, no breeder or hatchery should be content with having qualified for this class. Control and eradication measures should be practiced continuously with a view to reducing the percentage of reactors each year and qualifying for the U. S. Pullorum-Passed class and then the U. S. Pullorum-Clean class as soon as possible.

(YELLOW)

FIGURE 6.—Design used to identify U. S. Pullorum-Controlled flocks, eggs, poults, and hatcheries.

Par. 2. **U. S. Pullorum-Controlled flocks.**—These flocks shall meet the following requirements:

(*a*) All turkeys to be used as breeders shall be tested for pullorum disease when more than 4 months of age under the supervision of an official State agency, and shall contain fewer than 2 percent reactors, the last test being made within 6 months immediately preceding the date of first sale of hatching eggs, poults, or breeding stock from such flocks.

(*b*) All indicated carriers of pullorum disease shall be removed from the premises on completion of the test and disposed of in a manner satisfactory to the official State agency.

(*c*) All birds remaining in the breeding flock shall be properly leg- or wing-banded.

(*d*) Individual birds introduced into U. S. Pullorum-Controlled flocks shall have passed, within 6 months, a negative official test for pullorum disease.

Par. 3. A flock containing 2 percent or more of reactors on the first test, on being retested at intervals of not less than 21 days, and all reactors disposed of after each test until the percentage of reactors is fewer than 2 percent, may qualify as a U. S. Pullorum-Controlled flock.

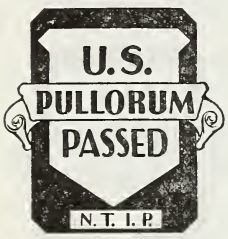
Par. 4. **U. S. Pullorum-Controlled hatching eggs.**—Such eggs are from U. S. Pullorum-Controlled flocks.

Par. 5. **U. S. Pullorum-Controlled poults.**—These are hatched from eggs produced by U. S. Pullorum-Controlled, U. S. Pullorum-Passed, or U. S. Pullorum Clean flocks in a U. S. Pullorum-Controlled hatchery.

Par. 6. **U. S. Pullorum-Controlled hatcheries.**—These hatcheries operate under the supervision of an official State agency and (1) buy or sell turkey or chicken hatching eggs, (2) incubate and hatch turkey or chicken eggs, (3) brood or sell poults or chicks, or (4) be dealers in or agents for such products from only U. S. Pullorum-Controlled, U. S. Pullorum-Passed, or U. S. Pullorum-Clean flocks and hatcheries, except that custom hatching may be carried on under the conditions prescribed in section 1, paragraph 12 of this article.

SECTION 4. U. S. PULLORUM-PASSED CLASS

Paragraph 1.—This class, which embodies the recognition of infected premises, permits no tolerance in the official recognition of the flock. It emphasizes the advisability of retesting at frequent intervals until no reactors are found and, therefore, is a more effective step toward eradication than the tolerance classes. No breeder should be content with having qualified his flock for this class. Control measures should be practiced continuously with a view to eliminating all infection and qualifying for the U. S. Pullorum-Clean class as soon as possible.



(RED)

FIGURE 7.—Design used to identify U. S. Pullorum-Passed flocks, eggs, poults, and hatcheries.

Par. 2. **U. S. Pullorum-Passed flocks.**—These flocks shall meet the following requirements:

(*a*) All turkeys to be used as breeders shall be tested for pullorum disease when more than 4 months of age under the supervision of an official State agency, and shall contain no reactors, the last test being made within 6 months immediately preceding the date of first sale of hatching eggs, poults or breeding stock from such flock. When reactors are found the flock may qualify as U. S. Pullorum-Passed, provided it is retested at intervals of not less than 21 days, until one negative test is obtained.

(*b*) All birds remaining in the breeding flock shall be properly leg- or wing-banded.

(*c*) Individual birds introduced into U. S. Pullorum-Passed flocks shall come from U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks only, except that individual birds from other sources may be introduced provided they are quarantined for 15 days, then officially tested for pullorum disease and found to be negative.

Par. 3. **U. S. Pullorum-Passed hatching eggs.**—Such eggs are from U. S. Pullorum-Passed flocks.

Par. 4. **U. S. Pullorum-Passed poults.**—These are hatched from eggs produced by U. S. Pullorum-Passed and U. S. Pullorum-Clean flocks in a U. S. Pullorum-Passed hatchery.

Par. 5. **U. S. Pullorum-Passed hatcheries.**—These hatcheries operate under the supervision of an official State agency and (1) buy or sell turkey or chicken hatching eggs, (2) incubate and hatch turkey or chicken eggs, (3) brood or sell poults or chicks, or (4) be dealers in or agents for such products from only U. S. Pullorum-Passed or U. S. Pullorum-Clean flocks and hatcheries.

SECTION 5. U. S. PULLORUM-CLEAN CLASS

Paragraph 1. **U. S. Pullorum-Clean flocks.**—These flocks shall meet the following requirements:

(*a*) All turkeys to be used as breeders shall be tested for pullorum disease when more than 4 months of age under the supervision of an official State agency and shall contain no reactors on the first or any subsequent test made within 6 months immediately preceding the date of first sale of hatching eggs, poults, or breeding stock from such flock.

(*b*) All birds remaining in the breeding flock shall be properly leg- or wing-banded.

Par. 2. Individual turkeys introduced into U. S. Pullorum-Clean flocks shall come from U. S. Pullorum-Clean flocks only, except that individual turkeys from other sources may be introduced provided they are quarantined for 15 days, then officially tested for pullorum disease and found to be negative.

(BLUE)

FIGURE 8.—Design used to identify U. S. Pullorum-Clean flocks, eggs, poults, and hatcheries.

Par. 3. Flocks of this classification shall be designated as having been U. S. Pullorum-Clean for 1, 2, 3, etc., years.

Par. 4. **U. S. Pullorum-Clean hatching eggs.**—Such eggs shall come from U. S. Pullorum-Clean flocks.

Par. 5. **U. S. Pullorum-Clean poults.**—These are hatched in a U. S. Pullorum-Clean hatchery from eggs produced by U. S. Pullorum-Clean flocks.

Par. 6. **U. S. Pullorum-Clean hatcheries.**—These hatcheries operate under the supervision of an official State agency and (1) buy or sell turkey or chicken hatching eggs, (2) incubate and hatch turkey or chicken eggs, (3) brood or sell poults or chicks, or (4) be dealers in or agents for such products from only U. S. Pullorum-Clean flocks or hatcheries.

APPENDIX

OFFICIAL TESTING OF PULLORUM DISEASE[3]

For the benefit of active workers in laboratory and field, the essential portions of the original articles describing the two recognized methods of testing are herein reprinted verbatim.[4]

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[3] See footnote 2, p. 16.

[4] By permission of the editor of the Journal of the American Veterinary Medical Association.

THE STANDARD TUBE AGGLUTINATION TEST

(Thirty-sixth Annual Meeting of the United States Live Stock Sanitary Association; Report of the Conference of Official Research Workers in Animal Diseases, II. Serological Diagnosis of Pullorum Disease; Jour. Amer. Vet. Med. Assoc. 82 (n. s. 35); 488–490, 1933).

Collection and delivery of blood samples.—The blood samples shall be taken by properly qualified and authorized persons only, and in containers provided by the diagnostic laboratory or other authorized agent. The containers should be stout-walled test tubes, preferably ⅜ by 3 inches, without lip, or small well-selected medicine vials, which have been thoroughly cleaned, and dried in a hot-air drying oven. The tubes are accompanied by selected cork stoppers which, unless new, have been washed and thoroughly boiled or scalded, and dried. All birds must be officially leg-banded with bands supplied by the control agency.

The blood is procured by making a small incision in the large median wing vein, with a small, sharp lancet, and allowing the blood to run into the tube, or by the use of a small syringe (with 20- or 21-gage needle) which is properly cleansed between bleedings with physiological saline solution. From 1½ to 2 cc. of blood should be collected. The tubes are corked and laid on their sides in order to allow the blood to solidify in a long slant. After the tubes have completely clotted, they are packed and shipped by mail (special delivery), rapid express, or by messenger, to the laboratory. All labeling must be clear and permanent, and may be done with a suitable pencil on etched portions of the tubes, or by means of fast-gum labels.

The blood samples must reach the laboratory in a fresh and unhemolyzed condition. Hemolyzed samples should be rejected. It is imperative, therefore, to cool the tubes immediately after slanting and clotting, and unless they reach the laboratory within a few hours, to pack them with ice in special containers, or by some other cooling system which will insure their preservation during transportation. In severe cold seasons, extreme precautions must be exercised to prevent freezing and consequent laking. The samples must be placed in cold (5° to 10° C.) storage immediately upon arrival at the laboratory.

Preparation of antigen.—The antigen shall consist of three representative strains of *S. pullorum* which are of known, high agglutinability, but are not sensitive to negative and to nonspecific sera. They are grown on agar having the following composition:

Water	1,000 cc.
Difco beef extract	4 gm. (0.4 percent).
Difco Bacto-peptone	10 gm. (1.0 percent).
Dry granular agar (Difco)	20 gm. (2.0 percent).

Reaction-pH 6.8 to 7.2.

Large 1-inch test tubes, Kolle flasks or Blake bottles are streaked liberally over the entire agar surface with inoculum from *48-hour slant-agar cultures* prepared from the stock cultures of the selected strains.[5] Frequent resort to the stock cultures is highly desirable, in order to maintain the purity of the antigen, and to allow *long rest intervals for the organisms.* A second intermediate culture may be necessary at times to furnish luxuriant growths for the final transfers. The antigen-growing tubes or bottles are incubated 48 hours at 37° C. and the surface growth washed off with sufficient phenolized (0.5 percent) saline (0.85 percent) solution to make a heavy suspension or very light paste. The washings are filtered through lightly packed absorbent cotton placed in the apex of the funnel. The washings of the three separate strains are now combined in equal volume-density and stored in the refrigerator (5° to 10°) in tightly stoppered bottles.

The dilute antigen to be used in the routine testing is prepared from the stock antigen by dilution of the latter with physiological (0.85 percent) saline (C. P.)[6] solution containing 0.3 percent of phenol (Merck's blue or silver label brand), to a turbidity corresponding to 0.75–1.00 on the McFarland nephelometer scale. The hydrogen-ion concentration of the dilute antigen is corrected to pH 8.2 to 8.5 by the addition of dilute sodium hydroxide. In this narrow range thymol blue used as indicator (5 or 6 drops of the standard stock dilution added to from 5 to 6 cc. of the diluted antigen in ⅝-inch test tubes) imparts a dirty green

[5] The stock cultures are maintained by transferring to new sloped agar at least once a month and keeping at 18°to 25° C. (average room temperature) in a dark closet or chest, following incubation for from 24 to 36 hours at 37° C. The purity of the stock cultures should be checked at definite intervals by microscopic examination of Gram-stained slides.

[6] The sodium chloride should be of tested purity.

to greenish-blue color to the tube. Cresol red (7.2 to 8.8) also may be employed. The color reaction should be checked frequently by comparison with standard buffer solutions, with the use of the comparator block, or by the potentiometer method. New dilute antigen should be prepared each day and kept cold.

The diluted antigen is employed in 2-cc. quantities in 4-inch by ½-inch test tubes or 1-cc. quantities in smaller tubes in which the final serum-antigen mixtures are made and incubated. The distribution of the antigen in the tubes may be accomplished by the use of long burettes, or special filling devices made for the purpose.

Serum dilutions, incubation, etc.—Either of two dilutions of the test sera may be employed, namely 1:25 or 1:50.[7] The 1:25 dilution, when used, shall serve as a finding dilution and shall not be used to condemn a flock which has been placed on a * * * (pullorum-clean) list, or the immediate progeny of a * * * (pullorum-clean) flock, unless at autopsy the organism is found, or there is complete agglutination in dilutions of at least 1:50. In all official reports on the blood test the serum dilutions shall be indicated. The sera are introduced into the agglutination tubes in the desired amounts with well-cleaned serological pipettes or special serum-delivery devices which do not permit of the mixing of different sera.[8] The antigen and serum are well mixed before incubation.

Interpretation of results.—The results shall be recorded as:

N, or —, when the tube remains uniformly turbid, and there is no distinct settling of antigen.

P, or +, when there is a distinct clumping of the antigen, and the liquid between and above the agglutinated particles is clear. The reaction should be full 4+.

S, or ?, when the agglutination is only partial or incomplete (1+ to 3+). The reactions may be recorded as slightly suspicious, S or ?, or strongly suspicious, S or ?.

M, or missing, when samples listed on the original record sheet are missing.

H, or hemolyzed, when the blood samples were hemolyzed and unsatisfactory for the test.

B, or broken, when the sample tubes are broken on arrival, and no serum is obtained.

Some allowance must always be made for differences in the sensitiveness of different antigens and different set-ups, and therefore a certain amount of independent intelligent judgment must be exercised at all times. Also the histories of the flocks require consideration.

Preparation of the nutrient agar for antigen production.—Dissolve 20 gm. of dry Difco agar in 1,000 cc. of water, by heating for 15 to 20 minutes in a pressure sterilizer at 15 pounds' extra pressure. Add to the hot agar solution 4 gm. of Difco beef extract and 10 gm. of Difco Bacto-peptone. Test the reaction and adjust to as near pH 7.0 (6.8 to 7.2) as possible with dilute NaOH or HCl, as may be required. Heat for 10 to 15 minutes in the autoclave. Filter, if necessary, through absorbent cotton in funnel, and fill into large tubes, special flasks, or bottles.[9] Sterilize by autoclaving for 20 to 25 minutes at 15 pounds' extra pressure.[10] If partly purified or refined agar (preferably granular) is employed, the hot liquid medium should filter readily through the cotton, and be ready for tubing. Clarification with egg white or whole egg is necessary only when a poor or crude grade of agar is used. Stock nutrient agar should be kept away from sunlight and dust, and in a cool place.

THE RAPID SERUM TEST

(Runnels, Coon, Farley, and Thorp. Jour. Amer. Vet. Med. Assoc. 70 (n. s. 23): 660–662. 1927.)

Preparation of antigen, rapid method.—One strain of *Bacterium pullorum* is grown on nutrient agar (pH 7.5) for 48 to 72 hours, washed off with a very

[7] There is much difference of opinion whether 1:25 or 1:50 should be the minimum dilution, and considerable research must be done before a final agreement can be reached.

[8] Where serological pipettes (graduated in 1/100 cc.) are employed, a separate pipette should be used for each serum. Care must be exercised at all times to prevent the laking of the red corpuscles with water.

[9] If the ingredients dissolve completely and the reaction needs no adjustments, the second heating and the filtering may be omitted.

[10] When Blake bottles or Kolle flasks are used for growing the antigen, an additional heating for 5 minutes is desirable.

small amount of a 12 percent solution of sodium chloride containing 0.5 percent of phenol, filtered through glass wool to remove clumps of bacteria and of media and adjusted so that its turbidity is 50 times greater than tube 0.75 of McFarland's nephelometer.

Setting up tests, rapid method.—The tests are run on glass, ruled off in inch squares. The glass forms the top of a box in which is a frosted electric-light bulb that furnishes light and heat. The interior of the box is painted black. Two serum-antigen dilutions are used for each sample. The amount of antigen in each case is 0.002 cc. This amount of the concentrated antigen is equivalent to 1 cc. of the antigen diluted to correspond to tube 0.75 of McFarland's nephelometer. Since this is the amount and turbidity of the antigen employed in the slow method, the two tests are placed on the same basis as regards antigen. The serum used is in 0.02-cc. and 0.01-cc. amounts. Therefore, the serum-antigen dilutions are equivalent to 1–50 and 1–100 in the slow method. The serum and antigen are placed a short distance apart in the squares and are mixed thoroughly with a toothpick. With positive sera agglutination usually takes place immediately. Occasionally a serum-antigen mixture is found that requires nearly 5 minutes for complete flocculation to occur. When this kind occurs the reaction can be hastened by agitation with a toothpick.

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Health is the foundation of successful husbandry, since upon it depends successful production and reproduction. Constitutional vigor and sanitation provide the best insurance against ill health. Every turkey grower and every hatcheryman, therefore, is under obligation to maintain the health of his market and breeding stock, and to keep his premises in the best possible state of sanitation.

Turkeys should be maintained in pens or on ranges completely segregated from other poultry as an aid in the control of blackhead (enterohepatitis), pullorum disease, and other diseases transmissible to turkeys. Turkey eggs should be incubated and hatched in separate incubators (preferably in separate rooms) from chicken eggs, and poults should be brooded in separate rooms from chicks to guard against the spread of pullorum and paratyphoid infection.

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